

CLAIMS

What is claimed is:

1. A method for forming a contact window, said method comprise:

forming a plurality of semiconductor structures on a wafer;

forming a coating layer over said surface of wafer, where the depth of said coating layer is not less than the heights of said semiconductor structures;

10 forming a over coating layer over said coating layer; and

forming said contact window in both said over coating layer and said coating layer, wherein upper part of said contact window is outwardly widened.

15 2. The method of claim 1, wherein the etching rate of said over coating layer is higher than the etching rate of said coating layer.

20 3. The method of claim 1, wherein the lateral etching rate of said over coating layer is higher than the lateral etching rate of said coating layer.

4. The method of claim 1, wherein upper part of said contact window is outwardly oblique.

25 5. The method of claim 1, wherein upper part of said contact window is outwardly crooked.

6. The method of claim 1, wherein upper part of said contact window is outwardly smooth.

7. The method of claim 1, wherein an opening of said contact window locates on top surface of said over coating layer and said contact window lands on said semiconductor structures.

8. The method of claim 1, wherein an opening of said contact window locates on top surface of said over coating layer and said contact window lands on said wafer.

9. The method according to claim 1, wherein said semiconductor structures comprises gate, electrode of capacitor, isolation layer and multilevel interconnects.

15 10. The method according to claim 1, wherein said coating layer comprises dielectric layer.

20 11. The method according to claim 1, wherein material of said over coating layer is chosen from the group consisting of following: oxide and dielectric.

25 12. The method according to claim 1, wherein method of said forming said over coating layer is chosen from the group consisting of chemical deposition method and physical vapor deposition method.

13. A method for forming a metal plug, said method comprising:

forming a dielectric layer over a wafer;
planarizing the surface of said dielectric layer by a chemical
mechanical polishing;

5 forming an oxide layer over said dielectric layer, where said
oxide layer filling a plurality of polishing scars and said oxide layer
having an etching rate which is higher than an etching rate of said
dielectric layer;

10 forming a contact window in both said oxide layer and said
dielectric layer, wherein upper part of said contact window is outwardly
widen; and

filling a metal in said contact window.

14. The method of claim 13, wherein upper part of said
contact window is outwardly oblique.

15 15. The method of claim 13, wherein upper part of said
contact window is outwardly crooked.

20 16. The method of claim 13, wherein upper part of said
contact window is outwardly smooth.

17. The method of claim 13, wherein an opening of said
contact window locates on top surface of said oxide layer and said
contact window lands on said wafer.

25 18. The method according to claim 13, wherein said dielectric
layer is an annealing oxide layer, said annealing is formed in about 800
°C and then etching rate of said annealing oxide layer is higher then said

oxide layer.

19. The method according to claim 13, wherein method of said forming said oxide layer is chosen from the group consisting of 5 following: comprises chemical deposition method and physical vapor deposition method.

20. A method for forming a hole, said method comprise:
10 forming a coating layer over a wafer;
forming a over coating layer over said coating layer, wherein the viscosity of said cover coating layer is higher than the viscosity of said coating layer; and
forming said contact window in both said over coating layer and said coating layer, wherein upper part of said hole is outwardly widened.

CDP